WHAT IS CLAIMED IS:

1. A combustion system component for location between a turbine combustor and a first stage turbine airfoil, comprising:

a transition piece including a body defining a flowpath and having a generally circular inlet end for receiving combustion products from the combustor and a generally rectilinear outlet end for flowing the combustor products into the first stage nozzle;

said body defining between said inlet end and said outlet end an enclosure for confining the flow of combustion products between said ends;

a plurality of dilution holes formed in said transition piece body in a first zone adjacent said inlet end and in a second zone adjacent said outlet end for flowing dilution air into the transition piece body;

said dilution holes being sized such that substantial equal quantities of the dilution air flow into the flowpath in said zones, respectively.

2. A system according to Claim 1 wherein said plurality of holes in said first and second zones are unequal in number to one another.

3. A system according to Claim 1 wherein said first zone includes three holes and said second zone includes four holes.

4. A system according to Claim 1 wherein said holes are located in said transition piece body in accordance with the hole numbers ) through ) and X, Y, Z coordinates set forth in Table I wherein the X, Y, Z coordinates have an origin at the center of the circular inlet end with the Z coordinates extending from the origin in a downstream flow direction toward the outlet end, said holes lying along said transition piece body in an envelope within one inch in any direction along the surface of the transition piece body from the locations of the holes determined by said X, Y, Z coordinates.

5. A system according to Claim 1 wherein said holes in said transition piece body in said first zone are circular and have equal diameters.

6. A system according to Claim 1 wherein said holes in said transition piece body in said second zone are four in number, with at least a pair of said four holes being circular and equal in diameter.

7. A system according to Claim 6 wherein said holes in said transition piece body in said first zone are three in number with each hole being circular and equal in diameter to other holes in said first zone.

8. A system according to Claim 1 wherein said holes have a total area of about 7.10 square inches.

9. A combustion system component for location between a turbine combustor and a first stage turbine nozzle, comprising:

a transition piece including a body defining a flowpath and having a generally circular inlet end for receiving combustion products from the combustor and a generally rectilinear outlet end for flowing the combustor products into the first stage nozzle;

said body defining between said inlet end and said outlet end an enclosure for confining the flow of combustion products between said ends; and

a plurality of dilution holes formed in said body, said holes being located in said transition piece body in accordance with the hole numbers ) through ) and X, Y, Z coordinates set forth in Table I wherein the X, Y, Z coordinates have an origin at the center of the circular inlet end with the Z coordinates extending from the origin in a downstream flow direction toward the outlet end, said holes lying along said transition piece body in an envelope within one inch in any direction along the surface of the transition piece body from the locations of the holes determined by said X, Y, Z coordinates.

10. A system according to Claim 9 wherein said holes in said transition piece body in said first zone are circular and have equal diameters.

11. A system according to Claim 9 wherein said holes in said transition piece body in said second zone are four in number, with at least a pair of said four holes being circular and equal in diameter.

12. A system according to Claim 11 wherein said holes in said transition piece body in said first zone

are three in number with each hole being circular and equal in diameter to other holes in said first zone.

13. A system according to Claim 12 wherein said holes have a total area of about 7.10 square inches.